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10/591,919

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EXAMINER

LEE, REBECCA Y

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|---|--|
| Office Action Summary | Application No. 10/591,919 | Applicant(s) TANIGUCHI ET AL. | |
| | Examiner REBECCA LEE | Art Unit 1793 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 May 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-10 is/are pending in the application.
- 4a) Of the above claim(s) 1-3 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4 and 6-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Claims

Claims 1-3 are withdrawn. Claim 5 is cancelled. Claims 4 and 6-10 are pending where claims 4 and 6-10 have been amended in view of amendment filed 05/10/10.

Status of Previous Rejections

The rejections of claims 4 and 7-10 under 35 U.S.C. 103(a) have been maintained (with cancelled claim 5 incorporated into claim 4).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4 and 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizutani et al. (JP 2003239040) in view of Kashima et al. (JP 06108152).

Regarding claims 4 and 7, Mizutani et al. disclose a method to produce a hot-dip-galvanized high strength steel sheet with a composition identical to the instant invention, in mass%, as shown below (abstract and claim 3):

| Element | Instant claims | Mizutani et al. |
|---------|----------------|-----------------|
| C | 0.01-0.3 | 0.01-0.3 |
| Si | 0.005-0.6 | 0.005-0.3 |
| Mn | 0.1-3.3 | 0.1-3.3 |

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| | | |
|----|-------------|-------------|
| P | 0.001-0.06 | 0.001-0.6 |
| S | 0.001-0.01 | 0.001-0.01 |
| Al | 0.25-1.8 | 0.25-1.8 |
| N | 0.0005-0.01 | 0.0005-0.01 |
| Mo | 0.05-0.5 | 0.05-0.5 |
| Fe | balance | balance |

Mizutani et al. further teach the method to produce a hot-dip-galvanized high strength steel comprises hot rolling, cold rolling a slab with the above composition, heating the sheet in a molten zinc plating (hot-dip galvanization heating step) to a temperature of A_{c1} to $A_{c3}+100^{\circ}\text{C}$, holding for 30 seconds to 30 minutes, then cooling by a cooling rate of 1°C/s or higher to less than 600°C , then hot dip galvanizing and alloying at that temperature (sections 0008 and 0015). One of ordinary skill in the art would have expected the steel sheet to be cooled to room temperature (below 100°C) as claimed. Mizutani et al. also discloses the steel sheet comprise martensite obtained by quenching (section 0013), one of ordinary skill in the art would have expected the cooling rate of the sheet is greater than 5°C/s and to avoid further tempering as claimed.

Mizutani et al. do not expressly teach the claimed tempering step (holding at $200-500^{\circ}\text{C}$ for 1 second to 60 seconds).

Kashima et al. teach a similar method of producing a hot-dip-galvanized high strength steel, with a similar composition, comprises a tempering step, i.e., holding the sheet at 460°C for 5 seconds, during the final cooling step (figs 1-3).

It would have been obvious to one of ordinary skill in the art to incorporate the tempering step of Kashima et al. into the process of Mizutani et al. in order to obtain

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tempered martensite structure and improve the tensile strength of the steel sheet as taught by Kashima et al. (sections 0001 and 0004).

In addition, with expected the recited feature of “excellent in shapeability and hole enlargement ability” in preamble, the claimed area rate of ferrite and tempered martensite, and the claimed concentration of Fe in hot dip galvanized area, since the claimed process would be obvious over Mizutani et al. in view of kashima et al., such properties would have been expected.

Regarding claim 8, Mizutani et al. teach the same relationship between the mass% of Si and Al and a target tensile strength as claimed (abstract).

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mizutani et al. (JP 2003239040) in view of Kashima et al. (JP 06108152) as applied to claim 4 above, and further in view of Kobayashi et al. (US 6423426).

Mizutani et al. in view of Kashima et al. do not expressly teach the claimed post treatment, such as resin coating, after galvanization.

Kobayashi et al. teach a hot-dip-galvanized steel sheet would be further treated by resin coating (Column 9, lines 26-31).

It would have been obvious to one of ordinary skill in the art to further treat the a hot-dip- galvanized steel sheet of Mizutani et al. in view of Kashima et al. by resin coating as taught by Kobayashi et al. in order to reform its shape or adjust surface-roughness as taught by Kobayashi et al. (Column 9, lines 26-31).

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Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizutani et al. (JP 2003239040) in view of Kashima et al. (JP 06108152) as applied to claim 4 above, and further in view of Deguchi et al. (JP 05331537).

Regarding claim 9, Mizutani et al. in view of Kashima et al. do not expressly teach the preplating step as claimed.

Deguchi et al. teach a galvanized steel sheet would be preplating by iron to 0.5-2.0 g/m² per surface of the steel sheet after cold rolling and before hot-dip galvanization (section 0007 and table 1).

It would have been obvious to one of ordinary skill in the art to incorporate the preplating step of Deguchi et al. into the process of Mizutani et al. in view of Kashima et al. in order to achieve good plating nature (plating wetability, alloying treatment nature) as taught by Deguchi et al. (section 0007).

Regarding claim 10, Mizutani et al. teach the process further comprises pickling (section 0015).

Response to Arguments

Applicant's arguments with respect to claim 4 have been considered but are moot in view of the new ground(s) of rejection. The amended feature in claim 1, such as the alloying temperature, holding time and Fe concentration in hot dip galvanized area, have been covered in the rejections above.

Applicant's arguments filed 05/10/10 have been fully considered but they are not persuasive.

Applicant argues the heating patterns disclosed by JP'152 are different from JP'040 and claimed. However, the heating pattern of instant invention is covered by JP'040; examiner only relies on JP'152 to show that incorporating a tempering step, as taught by JP'152 into the process of JP'040 would improve the tensile strength of the steel sheet by obtaining tempered martensite structure. Since applicant has not provided any factual evidence to show that incorporating the tempering step of JP'152 would have upset the process of JP'040, applicant's argument is not found persuasive.

Applicant also argues that US'426 and JP'537 do not teach the claimed process. However, as stated in the previous action, examiner only relies on US'426 and JP'537 to show that incorporating the resin coating of US'426 and the preplating step of JP'537 would reform the shape or adjust surface-roughness of the steel sheet and achieve good plating nature (plating wetability, alloying treatment nature). Since applicant has not provided any factual evidence to show that incorporating the resin coating of US'426 and the preplating step of JP'537 would have upset the process of JP'040 in view of JP'152, applicant's arguments are not found persuasive.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to REBECCA LEE whose telephone number is (571)270-5856. The examiner can normally be reached on Monday-Friday 8:00 am - 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JERRY LORENZO can be reached on (571)272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/R. L./
Examiner, Art Unit 1793

/J.A. LORENZO/
Supervisory Patent Examiner, Art
Unit 1793